## MARK SCHEME for the October/November 2010 question paper

## for the guidance of teachers

## **5054 PHYSICS**

5054/41

Paper 4 (Alternative to Practical), maximum raw mark 30

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

• CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



Page 2		ge 2	Mark Scheme: Teachers' version	Syllabus	Paper	
			GCE O LEVEL – October/November 2010	5054	41	
1	(a)	(i)	ruler drawn perpendicular to floor close to end of rule at least as tall as horizontal dotted line		B1	
		(ii)	eye drawn level with end of rule looking towards rule dotted line (extended) must pass through representation of eye			
	(b)	(i)	0.5 1.3 2.1 2.8 3.5 4.3 cao all correct		B1	
		(ii)	axes		B1	
			scales x: 2 cm = 20 g y: 2 cm = 0.5 cm		B1	
			plotting points		B1	
			best fit straight line NOT through (0,0) ignore outside plotted points		B1	
		(iii)	line does not pass through the origin		B1	
	(c)	(i)	at least $\frac{1}{2}$ grid used, e.g. triangle drawn on graph > $\frac{1}{2}$ length of line or values s 0.038 ± 0.003 (other units may be used) NOT 0.04	een	C1 A1	
		(ii)	0.85 m / 85 cm cao unit required		B1	
		(iii)	11.6 ecf (c)(i) and (ii) ignore unit		B1	
					[Total: 12]	
2	(a)	(i)	1.7(1) (s)		B1	
		(ii)	2.924 m/s ecf (i) unit required 2.9 or 2.92 m/s ecf (i)		C1 A1	
	(b)	(i)	student not in line with end of rule / distance between rule and spring / students or between s allow lines drawn on diagram	pring and students	s B1	
		(ii)	start stopwatch after wave has passed start / stop stopwatch before wave gets to end / observed distance is smaller (than 5 m)		B1	
		(iii)	students have different reaction times / students in differe	ent positions	B1	
		(iv)	how to start stopwatch accurately e.g. teacher / student says 'go' as wave starts; student	stands at start of	B1 spring /	
			rules how to stop stopwatch accurately e.g. student (at end) sa NOT just student stands closer to rule	ys stop	B1	

	Page 3		Mark Scheme: Teachers' version	Syllabus	Paper
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	(c)	immerse teacher o	n the spring /	B1 <b>[Total: 9]</b>	
3 (a)		circuit co allow pic ammeter voltmete		M0 B1 B1	
		ohmmete	th ohmmeter and thermistor with no power supply er symbol correct or labelled component in circuit		M0 B1 B1
	(b)	waterbat thermom	eter and water / oil bath used (allow oven, max 2) h heated / how temperature changed eter close to thermistor (even in air) / r / allow to settle		B1 B1 B1
	(c)	•	ot be linear / does not show shape / curve of graph o get a good line of best fit / make graph / result more a	accurate	B1
					[Total: 6]
4	(a)	how forc e.g. bala	e is produced e is the same nce weight / mass on top of pencil / drop pencil eight used on both pencils / drop from same height		B1 B1
	(b)	correctly	shaped indentations in the plasticine and pointed deep	ber	B1
					[Total: 3]